

# APPENDIX C

---

## ***Wildland Fire Use in D Fire Management Zones - Summary***

---

## Wildland Fire Implementation Plan, Stage I

---

When a fire is detected and confirmed in a “D” fire management zone the first step is to complete the Fire Situation (Figure B.1 and the GO/NO GO checklist (Figure B.2). This will document the initial decision made concerning the management of the fire. If all of the questions on the GO/NO GO checklist are answered “YES” then the fire can be declared a WFU fire by the Field Manager or acting. This initial decision has to be made within 2 hours of confirming the fire. If no decision is made then the fire will automatically receive a suppression response.

Figure C.1

### FIRE SITUATION INFORMATION

- Fire Name & Number
- Jurisdiction(s)
- Administrative Unit(s)
- FMP Unit(s)
- Geographic Area
- Management Code
- Start Date/Time
- Discovery Date/Time
- Current Date/Time
- Current Size
- Location
- Cause
- Fuel Model/Conditions
- Weather
  - Current
  - Predicted
- Fire Behavior
  - Current
  - Predicted
- Availability of Resources

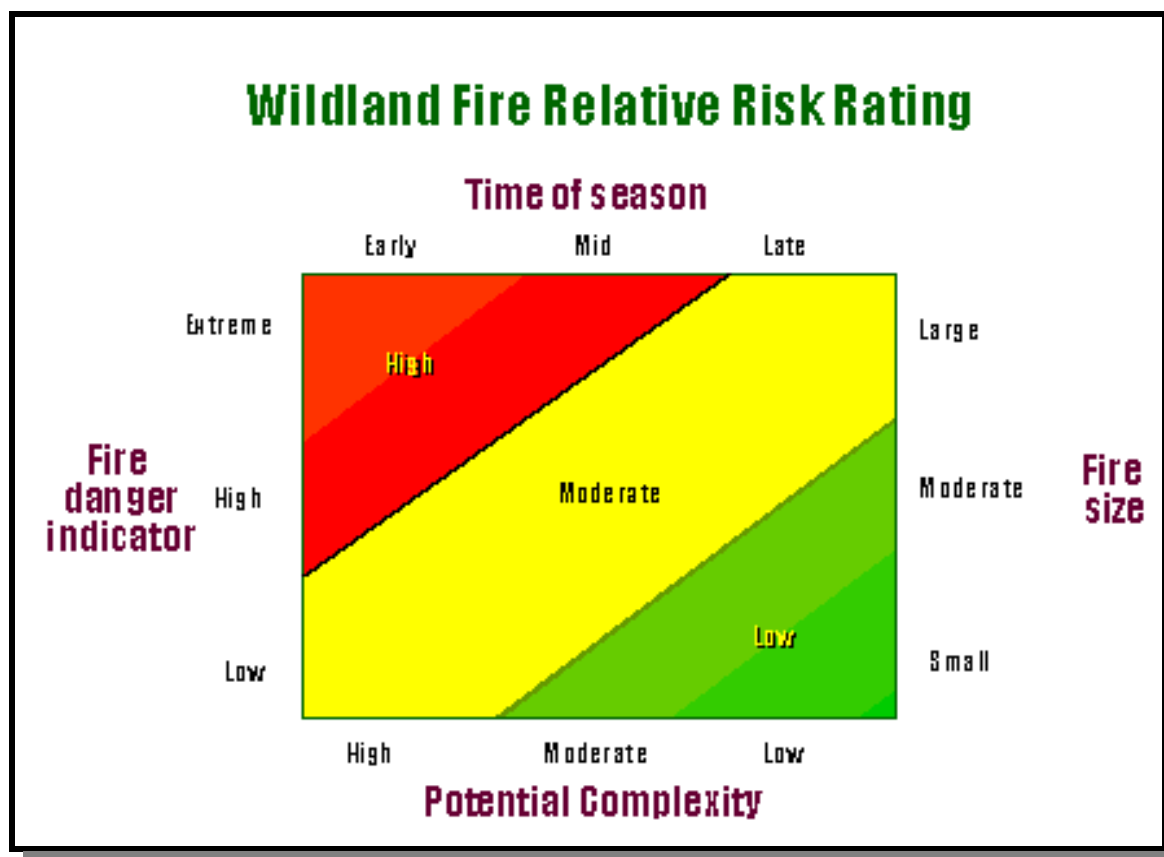


Figure C.2

GSFO INITIAL GO/NO GO CHECKLIST		
Fire Name: _____		
Legal: _____		
	<u>YES</u>	<u>NO</u>
1. Is the fire lightning caused?	_____	_____
2. Can threats to life or property (if any) be mitigated?	_____	_____
3. Are the potential effects on cultural and natural resources inside the range of acceptable effects?	_____	_____
4. Is the fire not a threat to FMU boundary (72 hours)?	_____	_____
5. (1/1 - 7/15) Is the Fuel Model F ERC	_____	_____
(observed and predicted) from 29 or lower Crown ERC for the Roan Plateau		
(observed and predicted) from 32 or lower Gypsum ERC for Hack Lake, Bull Gulch & Castle Peak		
6. (7/16 - 12/31) Is the Fuel Model F ERC	_____	_____
7. (observed and predicted) from 35 or lower Crown ERC for the Roan Plateau		
(observed and predicted) from 39 or lower Gypsum ERC for Hack Lake, Bull Gulch & Castle Peak		
8. Is there a current State smoke permit for WFU fires?	_____	_____
9. Are smoke predictions "good" or "excellent" in the general fire weather forecast for the burn period?	_____	_____
10. Would WFU status result 2 or less FMUs with WFU fires?	_____	_____
11. Would WFU status result in 6 or less WFU fires zone wide?	_____	_____
12. Is Grand Junction Dispatch at planning level 2 or lower?	_____	_____
13. Are adequate fire staff specialists available?	_____	_____
14. Are there adequate initial attack resources?	_____	_____
15. Are there no management issues that would require a suppression response?	_____	_____
This fire is _____ approved* _____disapproved for WFU status.		
*attached are any direction/constraints to be used in the management of the WFU fire.		
_____		_____
Field Manager		Date

The relative risk of a decision can be determined by using the Wildland Fire Relative Risk Rating chart (Figure B.3). Each of the four inputs is rated. Two lines are drawn (fire danger rating to fire size rating and time of season rating to potential complexity rating). The zone where the two lines intercept is the Relative Risk Rating.

Figure C.3



### Wildland Fire Implementation Plan, Stage II

If the decision is made to implement a WFU fire the process proceeds automatically to Stage II. This stage provides managers and staff with information to initiate and continue management of the wildland fire for resource benefits. It includes validation of short-term implementation actions as a decision. This stage will provide predictions of where the fire may go, how intense it may burn, how fast it may spread, what the necessary short-term management actions are, what the full complexity is, and if long-term management actions need to be addressed immediately.

Stage II requires that a Fire Use Manager (FUMA) be assigned to the incident. Requirements for a FUMA are that the person be qualified as a Prescribed Fire Manager and Burn Boss I.

The FUMA and the Field Manager must concur that the fire can be managed safely and responsibly for wildland fire use. They must consider factors such as smoke impacts, rare and endangered species, cultural and heritage resources, as well as the topography, fuels, and expected weather which will govern

the fire's behavior. They must consider private property nearby, public assets such as bridges and roads, and the availability of fire fighting personnel and other resources needed to manage the fire.

The WFIP Stage II, Short-Term Implementation Actions, represents the initiation of management for resource benefits. During this stage, the potential fire behavior is calculated; uncertainty is reduced by assessing the risk of the fire (how quickly it could spread, and how intense the fire may burn); fire complexity is weighed; necessary immediate and short-term management actions and resources are reviewed; and evaluation of whether to move directly to Stage III is done.

## **WFIP Stage II: Short-Term Assessment and Implementation Actions**

1. Fire Behavior Predictions and Risk assessment
2. Short-term implementation actions
  - Objectives and desired effects
  - Safety considerations
  - External concerns
  - Environmental concerns
  - Threats
  - Short-term implementation actions (include description of action and expected duration)
  - Estimated Costs
3. Complexity Rating Worksheet
4. Situation Assessment Chart (Figure A.4)
5. Periodic Fire Assessment

The Short-term Implementation Actions section describes what the initial or immediate implementation actions will be. These actions can vary significantly, depending upon specific circumstances of the particular fire. In cases where the fire may be fuel-limited, surrounded by sparse fuels or natural barriers with only limited spread potential, monitoring may be specified as the necessary implementation actions. In other cases, monitoring plus some form of limited mitigation actions may be necessary. In still other cases, fuel types in which the fire is burning may require immediate actions to delay, check, or direct the spread of fire.

A Wildland and Prescribed Fire Complexity Analysis has been developed to aid in evaluating the overall complexity of specific fires. This analysis incorporates an assigned numeric complexity value for specific complexity elements that are weighted in their contribution to overall complexity. The weighted value is multiplied times the numeric value to provide a total element rating. Then all total values are added to generate the summed complexity numeric value. Breakpoint values are provided for low, moderate, and high complexity.

Complexity elements that have been established include:

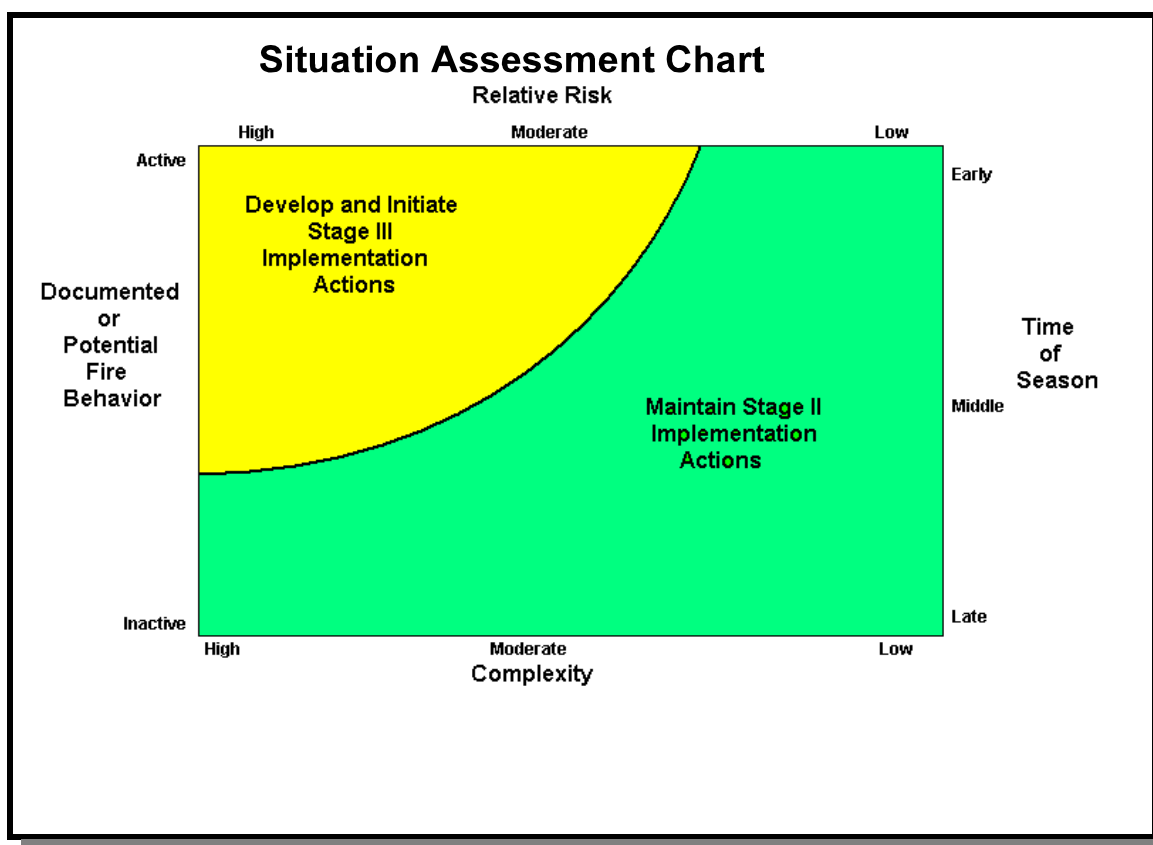
- |                                      |   |
|--------------------------------------|---|
| • Safety                             | • Natural, cultural and social values to be protected |
| • Treats to boundaries               | • Logistics   |
| • Fuels and fire behavior            | • Political concerns                                  |
| • Objectives                         | • Tactical concerns                                   |
| • Management organization            | • Interagency coordination                            |
| • Improvements to be protected       |   |
| • Air quality values to be protected |   |

The Situation Assessment Chart (Figure A.4) provides the Field Manager and staff with an aid to determine if Stage III, Long-Term Assessment and Implementation Actions need to be developed, documented, and implemented immediately, or if the fire can be managed through the established short-term implementation actions until indicated otherwise by the Periodic Fire Assessment. For many wildland fires, fuel continuity and spread potential will be low. In other situations, environmental conditions will

preclude active burning and spread. For instances such as these, immediate completion of Stage III of the WFIP will not need to occur until specific thresholds are reached. These thresholds are assessed subjectively on this chart or through the continued assessment provided by the Periodic Fire Assessment.

The Situation Assessment Chart (Figure A.4) will help the Field Manager and staff prioritize planning needs for multiple fires and ensure that those having the greatest need will receive the necessary planning in response to management capability and time constraints. To complete the assessment, local fire staff evaluate the criteria and determine if the fire warrants completion of the long-term implementation actions (Stage III) at this time or if Stage II implementation directions are adequate. If Stage II actions continue, the Periodic Fire Assessment will determine if and when Stage III will be prepared. To obtain the *need indication*, connect the top and bottom variables with a single line and then connect the left and right variables with a single line. Where the line crosses indicates the need for WFIP Stage III. The appropriate need is read directly off the chart.

Figure C.4



## **Wildfire Implementation Plan, Stage III**

---

This stage represents completion of long-term implementation actions necessary to successfully accomplish the desired objectives. The WFIP has been progressively developed throughout all stages; this represents the final stage. It presents tactical implementation information and will be attached to information developed in previous stages.

### **WFIP Stage III: Long-Term Assessment and Implementation Actions**

- Objectives and Risk Assessment Considerations
  - Natural and Cultural resource objectives and constraints/considerations
- Maximum Manageable Area (MMA) Definition and Maps
- Fire Projections and Maps
- Weather season/drought discussion and prognosis
- Long-Term Risk Assessment (describe techniques and outputs, include maps as appropriate)
- Probability of Success
- Threats
  - Threats to MMA
  - Threats to Public Use and Firefighter Safety
  - Smoke dispersion and effects
  - Others as identified
- Monitoring Actions (actions, frequency, and duration)
- Holding Actions (describe holding actions, management action points that initiate these actions, and key to map if necessary)
- Resources needed to manage the fire
- Estimated costs of long-term implementation actions
- Contingency Actions (describe contingency actions, management action points that initiate them, and resources needed)
- Information Plan
- Post-burn evaluation
- Signatures and Date

This stage details operational activities and documents the planning completed to ensure adequate mitigation actions have been developed. These actions will provide the best protection against fire activity exceeding acceptable limits. Mitigation actions are those on-the-ground activities that will serve to increase the defensibility of the Maximum Manageable Area (MMA), check, direct, or delay the spread of fire, and minimize threats to life, property, and resources. Mitigation actions may include mechanical and physical non-fire tasks and specific fire applications. Their purpose is to construct firelines, reduce excessive fuel concentrations, reduce vertical fuel continuity, create fuel breaks or barriers around critical or sensitive sites or resources, create "blacklines" through controlled burnouts, and limited suppression actions to limit fire spread and behavior.

Completion of this stage is triggered by either the Stage III Situation Assessment Chart (WFIP Stage II) or through the Periodic Fire Assessment, Part 2 Stage III Situation Assessment Chart. Once Stage III has been completed, the full WFIP will have been developed.

### **Maximum Manageable Area Determination**

All wildland fires being managed under appropriate management response strategies requiring WFIP Stage III (meaning those fires where the WFIP planning has progressed to Stage III) will have a defined Maximum Manageable Area (MMA). The MMA delineates a geographical area constraint and an ultimate acceptable size for a given wildland fire managed for resource benefits. It provides for closely directed fire

management application in a specific area defined by resource objectives, fire and weather prescription elements, social needs, political considerations, and management capability. This is to ensure that there is a clear and common understanding of the authorized size and location of the fire among Field Managers and cooperators.

All Maximum Manageable Areas will:

- be fixed and not subject to change once established and approved by the Field Manager, unless that change is approved in writing by the Field Manager.
- serve as a definition of firm limits of management capability to accommodate the social, political, and resource impacts for all wildland fire managed for resource benefits.

*NOTE: The complex nature of fires and land management precludes the ability of managers to write a set of guidelines or directions that cover all potential situations. Past experiences and recognition of future potential situations require the following consideration regarding the rigid nature of drawing lines on a map.*

There may be isolated cases where formal implementation of the Wildland Fire Situation Analysis (see Appendix C) process because a wildland fire exceeded an established MMA is not prudent or logical. In these situations, experience may indicate that the MMA will be exceeded by the specific wildland fire on a very small or non-threatening scale. Management options in this situation include:

- Constraining the fire spread to the small or non-threatening overrun of the original acceptable area using available holding forces currently in use, and identified in the Wildland Fire Implementation Plan, Stage II or III. This return must be accomplished within two burning periods.
- In the case of relatively long range spotting, treat an isolated spot generated by this natural process as a separate fire. Determine appropriate management action for this new ignition separately from the original wildland fire, based on criteria specific to this fire.

If the Field Manager and Fire Management Officer determine that the fire cannot continue to be managed within its original approved boundary, a Wildland Fire Situation Analysis (WFSA) will be utilized to select a new strategic alternative and appropriate management response.

### **Long-Term Risk Assessment**

An array of decision-making support aids is available to support wildland and prescribed fire risk assessment. The use of technological tools is appropriate when a specific tool can give the decision-maker information that reduces uncertainty associated with possible outcomes of the decision, reduces the risk of undesirable outcomes, and facilitates the best decision possible.

The choice of technique will depend on the information needed and the state of knowledge regarding that subject area. Techniques may range from a subjective, descriptive comparison to a very objective in-depth analysis using sophisticated mathematical models.

Technological advances in fire behavior prediction, fire spread estimation, fire effects prediction, smoke production and dispersal, rare event assessment, and fire area simulation now make it possible to obtain better information, reduce uncertainty, assess potential fire outcomes, evaluate consequences of failure, and determine probabilities of success more effectively than ever before. Using this type of information in decision-making promotes better management decisions and ultimately, more desirable outcomes. As



new technology becomes available for application in management situations, it must be utilized to improve operational actions to the greatest degree possible.

Specific assessment products useful in evaluating risk include:

- Probability of the fire reaching the MMA perimeter,
- Probability of a season-ending weather event,
- Indications of where the fire may spread, or total area that may be burned by the fire,
- How fast the fire will travel,
- How soon the fire may reach critical sites or the MMA perimeter,
- Indications of how the fire may burn; predictions of intensity and severity,
- Fuel conditions, moisture conditions, departures from average conditions,
- Fire dynamics - indicators of potential rapid escalation in fire behavior,
- Analysis of fire danger indicators, comparison with 10 years statistics,
- Fire history reviews, records of past fires in terms of area burned and type of fires (i.e., low - moderate intensity, surface fire, stand replacement, etc.),
- Predictions of the range of potential fire effects on natural and cultural resources,
- Probability of adverse smoke events and dispersal.

No mandatory requirements exist for risk assessment. However, an assessment must be completed that yields much of the information listed in the product list above. Long-term risk assessment computer models such as the Rare Event Risk Assessment Process [RERAP], and Fire Area Simulator [FARSITE] are available to assess risk. As the quality of risk assessment increases, the quality of subsequent decisions and probability of desirable outcomes will increase. Units should strive for the highest quality decisions possible.

No interagency standards exist for the configuration of teams responsible for preparation of Wildland Fire Implementation Plans, the duration of time that they must be in place, and what products they must create. For more complex situation, formalized teams may make the most significant contribution in support of local units and management of the fire. These teams may be developed locally from unit and cooperator personnel or be a formal, established team obtained through the established resource ordering process. Teams must include a leader (preferably Fire Use Manager or higher qualification with fire use experience), a fire behavior specialist (preferably RXFA), and other specialists as needed to support tactical operations, planning, and logistical support needs. In any case, the capability to predict fire behavior and assess risk is critical. This capability can be fulfilled in most situations by a Prescribed Fire Behavior Analyst (RXFA) or Fire Behavior Analyst (FBAN). But, these positions have somewhat different training, experience backgrounds, and slightly different capabilities. Prescribed Fire Behavior Analysts are significantly important in predicting the potential area and extent of burning, assessing long-term risk, and validating the maximum manageable area (MMA). An FBAN can best provide fire behavior predictions, access weather observations and forecasts, assess short-term risk, and predict the potential area and extent of burning. The RXFA position will most effective for long-term planning as needed for wildland fires managed for resource benefits while the FBAN will be markedly important for short-term predictions with special emphasis on interrelationships between safety and tactical implementation actions.

Estimates of fire behavior and risk are prerequisite to successful preparation of a Wildland Fire Implementation Plan. A complete review of MMAs, input regarding fire potential, potential risk, and extended fire behavior predictions for comparisons of expected and experienced severe fire scenarios is required. During Stage I and II, either Prescribed Fire Behavior Analyst or Fire Behavior Analyst positions can be utilized to provide the necessary information. Long-term risk assessment can be conducted through use of the RERAP or FARSITE programs in Stage II, and must be done in Stage III unless not

physically possible. During this process, a qualified RXFA [or FBAN who has successfully completed S-492, Long-Term Risk Assessment, and S-493, Fire Area Simulator (FARSITE)] is required. An RXFA does not have to remain continually involved with the wildland fire after completion of the WFIP. The local fire staff or Fire Use Manager (FUMA) will determine the necessary level of involvement of the RXFA during implementation activities.

As WFIP Stage III is prepared, the information will be attached to Stage I and II information to complete the WFIP. In the event that the fire has been burning for a relatively long duration and information contained in Stages I and II is no longer current, it will be updated or replaced during preparation of WFIP Stage III.

### **Periodic Fire Assessment**

For each wildland fire use action, the Field Manager (or delegated individual) is required to periodically affirm the capability to continue management of the fire. This stage is intended to prevent the unchecked escalation of an individual fire situation or the total fire management situation without evaluation and adequate planning. A checklist of information must be completed that accomplishes two purposes. First, this checklist affirms the appropriateness of continued management of the fire for resource benefits. Second, this checklist confirms the decision pertaining to the need to develop and document the WFIP - Stage III. The Periodic Fire Assessment consists of three components: a re-validation of the appropriateness of continued management for resource benefits, an assessment of the need to escalate from WFIP Stage II to Stage III, and a signature table that affirms the Field Manager's concurrence.